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News Bulletin of The Entomological Society of Victoria Inc.

THE ENTOMOLOGICAL SOCIETY OF VICTORIA (Inc)

MEMBERSHIP

Any person with an interest in entomology shall be eligible for Ordinary membership. Members of the Society include professional, amateur and student entomologists, all of whom receive the Society's News Bulletin, the Victorian Entomologist.

OBJECTIVES

The aims of the Society are:

- (a) to stimulate the scientific study and discussion of all aspects of entomology,
- (b) to gather, disseminate and record knowledge of all identifiable Australian insect species,
- (c) to compile a comprehensive list of all Victorian insect species,
- (d) to bring together in a congenial but scientific atmosphere all persons interested in entomology.

MEETINGS

The Society's meetings are held at 'InfoZone', Museum Victoria, Carlton Gardens, Melway reference Map 43 K5 at 8 p.m. on the third Friday of even months, with the possible exception of the December meeting which may be held earlier. Lectures by guest speakers or members are a feature of many meetings at which there is ample opportunity for informal discussion between members with similar interests. Forums are also conducted by members on their own particular interest so that others may participate in discussions.

SUBSCRIPTIONS

Ordinary Member	\$20.00 (overseas members \$22)
Country Member	\$16.00 (Over 100 km from GPO Melbourne)
Student Member	\$12.00
Associate Member	\$ 5.00 (No News Bulletin)

Associate Members, resident at the same address as, and being immediate relatives of an ordinary Member, do not automatically receive the Society's publications but in all other respects rank as ordinary Members.

Cover design by Alan Hyman.

Cover illustration: The pale Sun Moth, *Synemon selene* Klug, is an endangered species restricted to perennial grassland dominated by *Austrodanthonia* in Western Victoria. It is now extinct in SA, and was presumed extinct in Vic. until its rediscovery, in February 1991, by the late Frank Noelker and Fabian Douglas. The Victorian Populations are parthenogenetic with all specimens comprising females, a most unusual trait in the Castniidae. Illustration by Michael F. Braby.

MINUTES OF THE GENERAL MEETING 15 OCTOBER 2004

The president opened the meeting at 8:03 pm.

Present: P. Carwardine, I & M Endersby, A. Glaister, E & P Grey, D. Hilton, P. Marriott, D. Stewart.

Apologies: D. Dobrosak, A. Kellehear, K. Walker, G. Weeks

Minutes: Minutes of the 20 August 2004 meeting [*Vic. Ent.* 34(5): 49-50] were accepted: M: P. Carwardine, S: P. Marriott.

Speakers:

(1) Sarah Holland-Clift from Department of Primary Industries (KTRI) gave a talk on the Biological Control of Widespread Weeds. Research on biological control of weeds is shared between State and Federal bodies and the targets for Victoria are: Bridal Creeper, Gorse, Blackberry, Ragwort, Paterson's Curse, Boneseed, Horehound and English Broom. The seed bank or tuber mats of weeds is very long-lived and continual control is required over many years. If biological control using natural enemies from the plant's country of origin can be achieved with self-dispersing, self-sustaining populations the technique is cost effective. However it is slow acting, control is variable and the desired level of control is difficult to achieve. Integrated weed management requires biological control, some use of herbicides, physical removal, changed cultural practices and the use of fire.

Biological control is best used where the infestation is dense and persistent, in areas that are difficult to access, and where there would be collateral damage to rare native plants if herbicides were used. For success it is important to find insects or fungi which attack different parts of the plant, are active at different times of the year, and are viable throughout the whole distribution of the weed. Once a potential organism has been identified approval from 21 organisations must be obtained before import and testing under quarantine conditions can be conducted.

The Weed Warrior program in schools has been very successful in grades 3-8 where children are introduced to the biology of the pest and the control, and they rear and then release the agents in conjunction with local land management groups. Sarah augmented her talk with a large box of seeds representing the seed load produced one gorse plant, an extensive tuber mat of Bridal Creeper, and live specimens of weed control insects and a rust. The President moved a vote of thanks for a well-prepared and interesting talk.

(2) Doug Hilton described a 16 day hike he undertook in Papua in the Baliem Valley starting from the town of Wamena. The party descended from an elevation of about 3000 m to sea level assisted by local bearers who included in their load a generator, fuel and other moth collecting equipment. Due to high rainfall collecting was possible on only three nights but that yielded hundreds of specimens including new genera and species. Doug illustrated his talk with slides of the terrain and a drawer of pinned specimens.

Treasurer's Report: General Account \$6,770; Le Souëf Account \$4,056

Correspondence:

- Invitation for members to attend the presentation of the Australian Natural History Medallion to Dr David Lindenmayer.
- Invitation from Merri Creek Management Committee to attend a meeting to discuss their project on the Golden Sun Moth population at Craigieburn. I. Endersby will represent the Society.
- Invitation to I. Endersby to attend Department of Primary Industries Reference Collections Forum.
- Announcement of Science Talent Quest Bursary winners: Kate Wischusen (Clifton Hill Primary School) for "Lookout" Primary Science Photography minor bursary \$30; Chloe Likkel (Kew High School) for "Butterflies" Junior Games minor bursary \$25.

General Business:

- New Members: Applications have been received from Justin Bartlett, Stephen Brown and Martin Guilfoyle for election at the December meeting.
- Excursion to Narmbool. This was cancelled because the Society could not comply with the insurance and safety plan requirements of the operator of the site. The President and Excursion Secretary will discuss modification of the requirements with the operator otherwise other sites will be found. The next excursion is planned for February or March.
- Those questionnaires which arrived by the closing date have been analysed and the results will be discussed at the next Council meeting together with those that arrived subsequently. First impressions are that members are fairly satisfied with the Society and newsletter.
- Next meeting will be a visit to the Bugs Alive exhibition on Saturday 11 December, prior to public access, followed by a visit to the Insect collection and end of year celebration.

The meeting closed at 9:25 pm and members then viewed specimens provided by the two speakers.

MINUTES OF THE COUNCILLOR'S MEETING 19 NOVEMBER 2004

Meeting opened at 5:11 pm

Present: I. Endersby, P. Carwardine, D. Dobrosak, P. Marriott.

Apologies: K. Walker, D. Stewart

Correspondence:

- A letter from Noone ImageWear offering to make a tie for the Association. This will not be accepted.

Treasurer's Report: General Account \$6,738; Le Souëf Account \$4,056. Ian reported that 13 people will be removed from membership as they have not paid their subscription for 2004. Ian also noted that a cash advance and finalisation of outstanding invoices from the previous editor require resolution prior to auditing the Society's accounts next month.

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Observations on the Lepidoptera of Vivonne Bay, Kangaroo Island, South Australia: -Spring 2003-Autumn 2004

D.A (Andy) Young

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Over the last 10 months, as part of a research project with Butterfly Conservation South Australia, I have been studying the butterflies & associated Lepidoptera of the Vivonne Bay area, on the south coast of Kangaroo Island, South Australia. During this time I have made some interesting observations. Apart from the abundance & diversity of both butterfly & moth species in the area, several observations of unusual behavior & food-plant usage bear some examination.

Antipodia atralba (Hesperiidae) A new location & an unusual food-plant:

In early November 2000 I spent a holiday at Vivonne Bay. During this time I made some butterfly observations, including one of a female Black & White Skipper, *Antipodia atralba*, which was noted on the 18th of November flying over a plant on which it appeared to intend to oviposit. I described this plant as a "pin-cushion grass". On conveying these observations (amongst others) to Roger Grund & Lindsay Hunt of B.C.S.A, both were interested in the presence of the butterfly at the location, as it represented a Westward range extension for the species on Kangaroo Island. They thought the "pin-cushion grass", *Galunia hystrix*, an unlikely food-plant, though they encouraged me to further my observations on this subject. This skipper has been previously found to utilise *Galunia densa* (Cyperaceae) (Fisher 1985) & *Galunia lanigera* (Grund 1996; Hunt 2003) as larval food-plants on Kangaroo Island. *G. lanigera* is only known to occur in the vicinity of Stokes Bay on the north side of the Island. *G. densa* is locally common in various parts of Kangaroo Island, but *A. atralba* is only known to use this food-plant in the vicinity of Seal Bay on the south coast. Neither of these plants appears to occur in the Vivonne Bay area. *G. hystrix* differs from either of the above plantes in having a very low, dense aspect, adapted to its chosen habitat on the exposed, windswept limestone coastal cliff tops of Kangaroo Island (plate 1), & in having very short, rigid, needle like leaves.

Following last spring & summers' observations of the Lepidoptera of Vivonne Bay, I can now make two definitive observational statements; 1/ that *A. atralba* is present in an area slightly west of Vivonne Bay. The adult butterflies (plate 8) have been noted during the month of November: 2/ that the species is feeding on the small Kangaroo Island endemic, *Galunia hystrix*, a previously unrecorded food plant. The colony is inside the Vivonne Bay Conservation Park, so its immediate future appears fairly safe. The food-plant observations are based on;

- 1/ the presence of eggs on wild *G. hystrix* in the area. The large light green/yellow eggs are laid at the tips of the *G. hystrix* blades (plate 3).
- 2/ the inducement of a captive *A. atralba* female to lay eggs on *G. hystrix*,
- 3/ the establishment of first instar larvae, which constructed shelters, on *G. hystrix*,
- 4/ the observation of multiple, later instar larvae in their shelters in the cliff top *G. hystrix* stands in the colony area,
- 5/ the presence of multiple pupal shelters, on *G. hystrix*, in the colony area. These shelters contained hatched, intact pupae of the species. The earliest date I have noted adult butterflies flying is the 11th of November. Wild eggs were noted up until the 13th of December. Based on observations that the egg development period is 15 days (Grund 1999), which coincides with my own observations during breeding experiments last year, I would suggest that adults are on the wing till the end of November. Having made numerous observation field trips to the Pt Ellen area

during March & early April this year, it is interesting to note that no autumn flight was observed. R. Fisher has noted no autumn flight of *A. atralba* in the Seal Bay area (Fisher 1985), however L. Hunt has observed an autumn flight at the Box Head colony on the north coast (pers. comm.). Detailed observations have been recorded of the form of the first instar larvae (plate 4) and its shelter constructing behavior. An interesting aspect of the use of *G. hystrix* as a food-plant is that the needle like leaves are usually 4-8 cm long. As the mature larvae are about 2cm-2.5cm long (plate 5) & the pupae are around 1.5-2 cm in length (plate 7), this doesn't leave much space at the base of the shelter for the emergent butterfly to escape through. Compounding this is the fact that sand and grit tends to gather at the base of the dense clumps of *G. hystrix* in the windy, cliff top environment. The way which the butterfly uses its diminutive food plant in the final instar larval & pupal stages (plates 6 & 7), given that the adult emerges at the very base of the plant at soil level, is a model of economy. More study of this western Kangaroo Island colony of *A. atralba* is needed. The small size and dark colouration of the adult butterflies, the use of *G. hystrix* as a food plant and the fact that the butterfly appears to have only a single (spring) brood, should prove an interesting topic for future study.

(Note: During field studies in late August, several larvae were located. One of the larvae appeared less developed than the others observed & may be the product of eggs laid in autumn. Arguing against this surmise is the fact that very small hatched pupae have been noted.)

Motasingha trimaculata (Hesperiidae)

The other skipper that has been noted as present in the western Harriet region of Vivonne Bay is the Three Spot Skipper, *Motasingha trimaculata* (plate 10). This skipper butterfly is relatively common in heath & open Mallee country with associated *Lepidosperma* vegetation. One environment where the butterfly can be encountered in quite large numbers is along the open limestone cliff tops in the same vicinity as the *Antipodia atralba* colony. *Lepidosperma* are growing at the back of the spray zone along the cliff top, with both *L. viscidum* & *L. concavum* types present. These *Lepidosperma* species are also present in the sand valley country to the north of this coastal environment. The butterflies are mainly observed in open rocky areas on or near the cliff top itself however. Further inland, where the early stages of this species have been observed, a definite preference for a certain form of *Lepidosperma viscidum* (plate 9), showing oviposition location) has been noted. Several *Lepidosperma* species are present in the Vivonne bay area. These include numerous viscid types, but the colour of the gum being exuded varies a great deal. Bright orange-red, amber & clear golden-yellow resins are observed on various plants, which exhibit appreciably different habits. The early stages of *M. trimaculata* have only been detected on somewhat taller plants exuding an amber resin. In both skipper species male butterflies predominate early in the flight period & females tend to predominate later.

Ogyris otanes (Lycaenidae)

One species that occurs in quite prolific numbers in the Vivonne Bay region is the Small Brown Azure, *Ogyris otanes* (plate 11). This is of interest as the butterfly is in serious decline & is threatened on the mainland (Grund 1999). Its food-plant *Choretrum glomeratum* & its attendant ant, *Camponotus terebrans* are common in suitable areas both east & west of the Harriet River (plate 2). The size range of observed adult butterflies ranges from dwarfed specimens with an expanded wing width of 34mm to very robust, large specimens with an expanded wing width of around 6cm. Behavioral differences were noted in the different size ranges of these specimens, the small specimens showing a great propensity to escaped capture. One very small female lay upside down with wings half expanded on the sandy ground when pursued. She appeared, to all intents & purposes, to be dead. When approached closely for observation the butterfly revived rapidly & flew off. Similar behaviour has been noted for *Ogyris idmo* (L. Hunt, pers. comm.). Another observation of interest in relation to *O. otanes* was the apparent use of the female's abdomen & legs to dig in the sandy soil at the base of the *Choretrum* bushes. This behavior, which I noted on two occasions, was most pronounced, with the legs scrabbling & the abdomen being inserted to

about a quarter of its depth before being used to flick the sandy soil away in an energetic manner. At the end of this activity the abdomen was inserted to some depth & I presume that ovipositing occurred, though more observational study will be needed to confirm this. The numbers of this butterfly sighted in the area approached several hundred on days of greatest activity. I think it would be of great benefit to the species if there could be more work done on both it & its habitat at Vivonne Bay in the future, to ensure that through conservation measures & environmental management the long term viability of the Small Brown Azure in the area is preserved.

Candalides (Erina) species (Lycaenidae)

One of my original observations of November 2000 related to the Western Dusky Blue, *Candalides (Erina) hyacinthina simplex*. During this time & during the subsequent years while I have been a resident at Vivonne, I had noted significant numbers of this species. It flew in spring & also during summer. During summer the species becomes extremely abundant for a period of about a month & a half. It now appears that the two broods in spring & summer are feeding on separate species of *Cassylia* (Lauraceae). Examples of the early brood of *C. h. simplex* noted during the months of September & October in 2003 were observed flying around, & presumably breeding upon, *C. melaethia*. The summer brood that became very abundant at times during the months of December 2003 & January 2004, was noted flying over, & the larval stages were successfully reared upon, a second species of *Cassylia* that has been identified by Mrs Bev Overton as *C. peninsularis*. During breeding experiments, *C. peninsularis* from a location where the parasitic host was *Melaleuca lanceolata* & around which the butterflies were common, was used as the primary food source for the larvae. On one occasion, as I was walking back from field studies, I obtained some *C. peninsularis* growing on a *Melaleuca uncinata* host. Second instar larvae rejected this food material & they only recommenced feeding when the *C. peninsularis* growing on *M. lanceolata* was provided. This would suggest that, in the Vivonne Bay region, *C. h. simplex* is sensitive to the host plant of this species of *Cassylia* larval food plant, & this leads to interesting speculation as to the cause of this acceptability. As *C. h. simplex* has been noted in the past as being widespread but never common, its presence in high densities at this location is also noteworthy.

The other species of *Candalides (Erina)* butterfly present at Vivonne Bay, the Blotched Blue, *Candalides (Erina) acasta*, is also worthy of note. In L. Hunt's 2003 paper on the butterflies of Kangaroo Island, he observed that, while the food-plants of this species are common & widespread through the 'Island, the butterfly itself is rarely encountered. During the period of my studies I have observed over 50 individuals of this species in the area flying during September & early October, & again during December & January. I have bred the larvae to the fourth instar, though as yet I have not successfully bred it through to the adult form. In the main it appears to be habitat specific, though isolated individuals have been found in a wide range of environments. One interesting note concerning this species is that an isolated female was encountered in a cliff top location, in which the only available food plant was *Cassylia pubescens*. This female was confined over & oviposited on the *C. pubescens*, however on emergence the larvae rejected this food plant & only started to feed when the *C. pubescens* was replaced by *C. glabella*. The area of greatest abundance for *C. acasta* at Vivonne Bay has large amounts of *C. glabella* growing throughout, with only a little marginal *C. peninsularis*, so it may prove that *C. acasta* is more food plant specific on Kangaroo Island than the mainland butterflies of the same type.

Neolucia agricola agricola (Lycaenidae)

This butterfly is common throughout the Vivonne Bay region &, in my experience, in suitable habitat throughout Kangaroo Island. Females have been induced to lay eggs on, & the wild butterflies are common around, a *Pultenaea* species which has been identified as *Pultenaea densifolia* by Bev Overton. Bev notes that this is a plant that has its strongest colonies on coastal linoid soil types in the Vivonne Bay area, though it does occur in small numbers in similar coastal situations in other areas of Kangaroo Island. The butterfly has been noted from the cliff tops of Pt Ellen & throughout heathy areas checked inland.

Theclinesthes species (Lycaenidae).

A final note of interest was the distribution of the three species of *Theclinesthes* butterflies on observed areas of Kangaroo Island. After observing a somewhat ambiguous specimen early in the season that I tentatively identified as *Theclinesthes serpentata serpentata*, during late March & early April 2004, 2 male *T. s. serpentata* were recorded at Vivonne Bay. It may now be definitively stated that while the butterfly is not common in the area, it is present. This is of interest as numerous suitable larval food-plants abound in the Vivonne Bay region. The species is relatively common in a cliff top environment at Kingscote, the main town on the 'Island, becoming abundant in late summer/autumn.

Theclinesthes alboeincta was recorded in large numbers at Island Beach, but despite the presence of *Adriana quadripartita* var. *klotzschii*, the species was not observed at Vivonne Bay. A specimen that has been identified as a male *Theclinesthes miskini* was closely observed at Island Beach in mid February. This butterfly, which was in fresh condition, had *Theclinesthes* type markings & a filamentose tail to the hind-wing that was half white & half black. Despite being observed in mid February, the specimen approached the colouration of the winter forms of *T. miskini* from further north on the mainland, being small in size & with a mid grey base colour on its under-wings. A female specimen was flying with the insect described above, but was not observed as closely.

Acknowledgements; Much heart felt thanks to both Mr. Roger Grund & Mr. Lindsey Hunt for their unfailing assistance & encouragement of my efforts over last summer & in particular to Roger Grund for his assistance in the preparation of this article. To Mrs. B. (Bev) Overton of Kingscote for assistance with food-plant identification & to Ms. Adrienne Coventry of Parndana for providing transport & encouragement during field trips in 2004. Special thanks to Mr. Geoff Standing, of Soho Computing, for technical assistance in the preparation of this article.

Photographic credits: my thanks to Mr. Chris Luscombe, Miss Verity, M. Carey & Ms. Adrienne Coventry for help with photographs for this article

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Plate 1, coastal cliff top environment of *A. atralba*



Plate 2, open heath-land environment with *Choretrum glomeratum*, habitat of *Ogyris otanes*

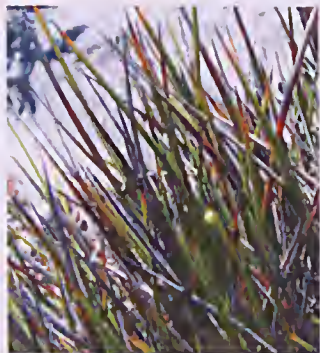


Plate 3. *A. atralba* egg on *Calinia hystrix*

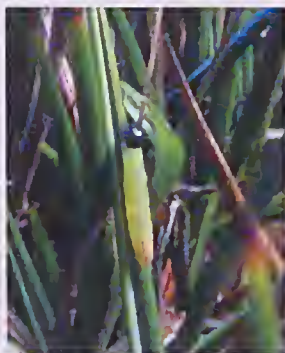


Plate 4. First instar larva of *A. atralba* on *Calinia hystrix*



Plate 5. *A. atralba* larva on *C. hystrix*

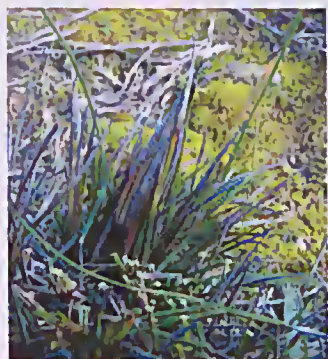


Plate 6. *A. atralba* larval shelter on *C. hystrix*, unopened



Plate 7. *A. atralba* pupa exposed in pupal shelter on *C. hystrix*

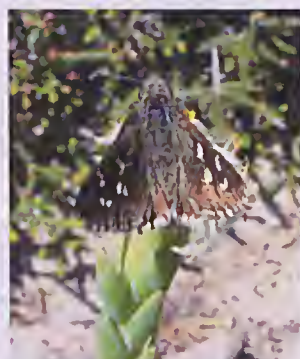


Plate 8. *A. atralba* adult



Plate 9. *M. trimaculata* eggs on *Lepidosperma viscidum*



Plate 10. *M. trimaculata* adult



Plate 11. *Ogyris olanes* mating

Some Observations of the Vine Moth, *Phalaenoides glycinae* Lewin at Whitlands – NE Victoria. (Lepidoptera; Noctuoidea; Agaristinae)

Peter Marriott
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It was the spectacular clump of orchids that first drew our attention. They were Cinnamon bells, or Potato Orchids - *Gastrodia* probably *procera*.

Attention was soon drawn to a dozen golden wasps with blue-green abdomens. As they darted over the deeply fissured bark at the base of a huge Eucalypt., they would dart around, find a fissure and busily explore the depths before returning to their flight (fig. 5).



Fig 1. Adult Vine Moth



Fig 2. Larva of Vine Moth in half constructed cocoon



Fig 3. Pupae and larvae of Vine Moth in woody detritus under bark of Eucalypt



Fig 4. Wasp drumming on bark.



Fig 5. Wasp (abdomen arrowed) exploring fissures in bark presumably for Vine Moth pupae/larvae



Fig. 6. Same sp. of wasp which emerged from Vine Moth pupal case.

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The Brachodidae of Victoria (Lepidoptera, Sesiioidea)

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Summary

The Brachodidae are a small family of day flying moths. Although often medium sized and colorful, little is known about life cycle and host plant preferences of these moths and many species remain undescribed. Four species had been recorded from Victoria previously only two of which were identified correctly. Here the knowledge on the Victorian brachodid moths is summarized. All Victorian species are figured including three yet unnamed taxa.

Introduction

The Brachodidae are a relatively small family that, together with the Clearwing moths (Sesiidae) and the Sun moths (Castniidae), form the superfamily Sesiioidea (Minet 1991). The present concept of Brachodidae with two subfamilies, Brachodinae and Phycodinae, was established by Heppner (1981), but the monophyly of the family and its placement in the Sesiioidea is still disputed. The family comprises approximately 135 named species, distributed in all regions of the world, except North America. Sampling of Brachodidae is hampered by the rapid flight of the mainly day flying adults and the cryptic life of the larvae. The knowledge of the life cycle of brachodid moths is still incomplete and the early stages have not been described in detail. Species of the Brachodinae subfamily appear to feed exclusively on monocotyledons, such as grasses, sedges and palms (Kallies, 1998, 2004), Phycodinae were bred from *Ficus* (Moraceae) and *Tamarindus indica* (Fabaceae) (Diakonoff, 1986; Common, 1990).

The Australian Brachodidae have never been the subject of a comprehensive study. Twenty three species were listed for the fauna of Australia when it was last summarised by Nielsen (1996), though the number of species present in collections is likely to exceed 40. Only two species were known to occur in Victoria, *Miscera desmotoma* (Lower, 1896) and *Miscera omichleutis* Meyrick, 1907. Another two species, *Miscera leucopis* Meyrick, 1907 and *Miscera orthaula* Meyrick 1907 have been erroneously reported from Victoria (Turner, 1913, 1942).

After coming to Australia in 2003, I started to investigate this family in detail. The aim of this study is a thorough revision of the Brachodidae of Australia. The preliminary summary of the knowledge on the Victorian Brachodidae presented here is expressly aimed to stimulate interest in this family which has been neglected for so long. I would appreciate any additional information on records or field observations of Brachodidae from Victoria or Australia.

Ecology of Brachodidae in Victoria

Most of the Australian Brachodidae and all species in Victoria belong to the genus *Miscera* Walker, 1863 within the subfamily Brachodinae. The majority of *Miscera* species seem to be associated with

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sedges, although *Miscera resumptana* Walker, 1863 from Queensland was collected flying near grasses (Edwards, pers. comm.). It is assumed that the larvae feed endophagously or between the roots of their host plants. However, this has never been clearly demonstrated.

The majority of brachodid moths are active during day and many species fly rapidly in bright sunshine. Specimens were mainly collected in heathland, open woodland and mallee within stands of sedges. Males and less often females can be observed flying with their wings fluttering in high frequency amongst their supposed food plants. Rarely, specimens will be found resting on leaves of sedges or on plants in close proximity. However, if disturbed, these specimens will fly off rapidly. Occasionally, brachodid moths were observed in large numbers on flowering mallee trees (Douglas, pers. comm.). Some species are attracted to artificial light, usually shortly after sunset.

Grasslands, sedge rich heath and open woodlands belong to the most vulnerable and endangered plant communities in Victoria. Other than the large areas of heathland and mallee still present in the north-west of the state, these habitats have been subject to urban development and agricultural usage, such as for pasture, on a large scale. Remaining patches of heath and sedgeland are found almost exclusively in close proximity to the coast. Amongst others, brachodid moths should be regarded as indicators of the high value of these plant communities for the conservation of Lepidoptera.

Brachodidae species recorded from Victoria

Miscera desmotoma (Lower, 1896) (Figs 1-2)

Miscera desmotoma was described from the vicinity of Melbourne and was apparently common in the southeastern suburbs of the city. Specimens were collected in Springvale, Chelsea, Dandenong (specimens in Department of Entomology, Museum Victoria, DEMV) and Cheltenham (Lower, 1896). The last record from this region dates back to 1931. Other specimens in DEMV are from Wandin (1907) (Turner, 1913), Moe (1933) and Genoa (1975). The majority of specimens were collected between the end of January and the end of March. From outside Victoria, this species is known only from a few localities in southeastern NSW, records from Western Australia (Turner, 1942) relate to other species.

On the 7th of February I collected a female flying in bright sunshine at the edge of open Banksia woodland in the Wilsons Promontory N.P.

Miscera omichleutis Meyrick, 1907 (Figs 3-4)

This small and dull colored species was collected around Melbourne and Gisborne at the end of the 19th century. Apparently it has not been seen since. Flight period is in November and December. Other records are from Blackwood (DEMV) and Mt Lofty, South Australia and Bathurst, New South Wales (Meyrick, 1907).

Miscera spec. 1 (Fig. 5)

This species is very similar to *Miscera desmotoma* but differs in its smaller size and details of the coloration. In the early 20th century one female was found around Dimboola (now in Australian National Insect Collection, ANIC). In this region it has been rediscovered by Fabian Douglas when he collected a female specimen flying in sunshine rapidly along a track in the Big Desert in 1990.

On another field trip in the Little Desert in 2003 he observed numerous specimens feeding on flowering mallee trees in the afternoon.

On February, 19th the author together with Peter Marriot collected a single fresh male probably belonging to this species in the Eumerella Flora Reserve resting on a leaf of *Lepidosperma viscidum* (Cyperaceae) at night. No specimens were collected at a nearby light trap suggesting this species being strictly active during day. Similar specimens, now in DEMV and ANIC, have been collected early in the last century near Torquay (1901) and Wallington near Geelong (1905). More material is needed to confirm the identity of the north-west Victorian and coastal populations of this taxon.

The specimens from Dimboola and Wallington were misidentified as *Miscera leucopsis* Meyrick, 1907 earlier (Turner, 1913, 1942). This species is not part of the Victorian fauna.

Miscera spec. 2 (Figs 7-8)

This species is unusual both in its appearance and behavior. While most Brachodidae are reluctant to fly after dark, this species has been collected predominately at light traps shortly after sunset. It was discovered by the late Ebbe Nielsen and Ted Edwards (ANIC) during a collecting trip in the Big Desert in 1992. Three males were attracted to light near Milmed Track at the end of February. In 2004 the author together with Fabian Douglas and Doug Hilton undertook a trip to the Big Desert to study this and other species. On the 28th of February approximately 10 male specimens of this species were attracted to mixed and UV light in mallee and open sedgeland, respectively. This confirmed the presence of the species and its readiness to actively fly after sunset. Some additional specimens were collected the next morning in the same spot rapidly flying in bright sunshine when disturbed.

A second population of apparently the same species was discovered in the Eumerella Flora Reserve near Anglesea by Peter Marriott in 2003 when he collected a male specimen at UV light. In February 2004 Peter and I collected another three male specimens at light. A fourth specimen was collected in a light trap at the same spot by Doug Hilton. On the 6th of March the author visited the locality again and observed several male specimens flying rapidly when disturbed during daylight. In both localities, *Lepidosperma viscidum* was identified as the likely host plant.

Miscera spec. 3 (Fig. 6)

This unnamed species is known only from a single male collected in October 1903 at Black Rock in the south-eastern suburbs of Melbourne. It is unique amongst all Australian Brachodidae. Any additional record of this species would be of highest significance.

Acknowledgements

The study of the Australian Brachodidae is greatly supported by Marianne Horak and Ted Edwards from the Australian National Insect Collection (ANIC), and by Ken Walker from the Department of Entomology of Victoria, Melbourne (DEMV). Additional support I gained from Peter Marriott (Bentleigh, Vic), Fabian Douglas (Rainbow, Vic) and Doug Hilton (Warrandyte, Vic); to all of them I wish to express my gratitude. Ms S. Hadden (Department of Sustainability and Environment) is thanked for granting a collecting permit for Victorian National Parks and protected areas.

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Fig. 1 - *Miscera desmotoma* (Lower, 1896), male, Dandenong. **Fig. 2** - ditto, female, Dandenong. **Fig. 3** - *Miscera onichileutis* Meyrick, 1907, male, Melbourne. **Fig. 4** - ditto, female, Black Wood, SA. **Fig. 5** - *Miscera* spec. 1, male, Little Desert. **Fig. 6** - *Miscera* spec. 3, male, Black Rock. **Fig. 7** - *Miscera* spec. 2, male, Big Desert. **Fig. 8** - ditto, male, Anglesea.

A Marsupial Margarodid (*Callipappus*)

Ian Endersby

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The hemipteran family Margarodidae contains over forty species and includes the cottony cushion scale *Icerya purchasi*. Of particular interest is the genus *Callipappus*, known as the Bird of Paradise Flies, from their males which extrude a fine tuft of glassy wax filaments from the tip of the abdomen. Little had been published on the biology of this genus until the article of Gullan & Brookes (1998).

Female *Callipappus*, which can attain a length of 40 mm, invaginate part of the abdomen to form a pouch called a marsupium to receive the eggs and protect the developing young. This occurs a few hours after mating when the female attaches itself to a stem using cement from a thoracic gland and retracts the four posterior segments of the abdomen into its body. The marsupium opens posteriorly from what is now the apparent tip of the abdomen and first instar nymphs, crawlers, emerge through this opening. During the incubation period the females effectively appear to be dead.

Observations

Fig. 1 shows a recently emerged female ascending a planted *Eucalyptus globulus* in a home garden at Montmorency, Victoria, prior to invagination. Fig. 2 shows an apparently lifeless invaginated female. It may have been taken on a Coastal Tea-tree *Leptospermum laevigatum* or Coast Wattle *Acacia longifolia* var. *sophorae* at McCrae a coastal locality on the Mornington Peninsula Victoria.

A specimen similar to that shown in Fig. 2 was being examined at Rotamah Island, near the coast in Gippsland Victoria, when a large number of nymphs emerged.



Fig. 1



Fig. 2

Oviposition behaviour in *Taractrocera papyria* (Boisduval) (Lepidoptera: Hesperiiidae: Hesperinae)

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Summary

Aspects of oviposition behaviour in the White-banded grass-dart, *Taractrocera papyria* (Boisduval) are described based on a single, convenience, field encounter in woodland, south east of Melbourne. The female walked backwards immediately before depositing a single egg on a leaf of *Microlaena stipoides* (Labill.) R.Br., growing amidst two other common grasses. Although there are two reports of similar egg-laying behaviour in a hesperiine species of the South-east Asian genus *Sunastus*, this report for *Taractrocera* represents the first record of backward walking immediately prior to oviposition, among Australian Hesperinae.

Introduction

Perhaps because many observers preferentially devote time to more conspicuous butterflies or those of conservation concern, little is known of the behaviour of the relatively widespread and common Australian skipper butterfly, *Taractrocera papyria* (Boisduval). Braby (2000) has reviewed available literature and provided snippets concerning adult basking and perching behaviours and its preferred habitats. Haywood (2003) recently documented aspects of mating behaviour, reporting a female carrier for the single couple studied in South Australia. This descriptive study details egg-laying behaviour, based on a single convenience observation in southern Victoria.

Observations

Locality: Churchill National Park, near Dandenong, Victoria (37°57'S, 145°15'E).

Habitat: grassy-patch near thicket of *Kunzea* and *Leptospermum* in woodland along channel track (90m a.s.l.)

Date: 29 Jan. 2002 at 4:25pm AEDT (1525h AEST)

Weather: during sunny period, still conditions; temp. c.23°C

Female in good condition, seen fluttering low above sunlit patch of soft grasses dominated by *Microlaena* and *Anthoxanthum*. Female settled, about 14cm above ground with wings closed and head upwards, on adaxial (upper) surface of leaf of *Microlaena stipoides*. No tactile contact with grass substrate observed prior to landing. Immediately after landing female walked slowly backwards down the near-vertical leaf blade, for about 3-4cm until partially hidden amongst the denser surrounding grass foliage. She remained still for several seconds within the undergrowth. Female then curled abdomen slightly to contact grass surface, and extruded a single, cream colored egg. Egg deposited in centre of leaf basal area, about 2cm above ligule, and about 4cm above yellowed-stem (transitionally etiolated by dense coverage of ground foliage). After depositing egg she walked forward, slowly back up the leaf for about 3cm. At this point, clear of tangled foliage, she basked temporarily, with head still directed upward, forewings in V-shape and hindwings flattened. After several seconds of basking she flew near-vertically upwards for several centimetres, then darted outward horizontally above the grasses to depart the area.

Although the egg was cream colored when first laid, after 24 hours it had developed a red micropyle area and some red lateral flecks that comprised a very incomplete dorsal band. When examined again a week or two later, it appeared desiccated, having failed to hatch.

Discussion

The oviposition host, *Microlaena stipoides*, is a common native grass of shaded woodlands (Burbidge & Gray 1976). The selected plant grew densely amongst a patch of *Anthoxanthum odoratum* and amid

emergent seedling stems of *Briza maxima* (all Poaceae). The leaf on which the egg was deposited showed earlier larval damage on the terminal portion, probably created by a first or second instar larva of this same species. Nonetheless it is also a larval host of three satyrids (Braby 2000) which no doubt utilise it either regularly or periodically at this locality. *M. stipoides* is a well publicised and credible host of *T. papyria*, which Braby (2000) attributed to Common and Waterhouse (1981). Yet, the circumstances on which Common and Waterhouse's host record is based are neither documented nor sourced, rendering it weak in terms of evidence-based science as stand alone data. I suspect Common and Waterhouse's uncited primary source was Nikitin (1964: 47) who remarked, almost certainly in reference to the juvenile stages, that it was "very common" on *M. stipoides* in the Sydney basin. In cases where early biological facts are ambiguous, vague or detail-scanty, yet purported as truth by repeat citations and familiarity, duplicate records are strengthening and should be welcomed in the literature to increase the rigour underlying Australia's lepidopterological knowledge base. To this end, my oviposition record from Victoria circumstantially strengthens both eastern Australian reports, and Williams and Atkins (1993) have confirmed its usage in WA by subspecies *agraulica*.

Walking backwards to aid site selection for egg deposition has been reported in at least four genera of Trapezitinae in Australia (Braby 1993), and in the Asian Hesperine genus, *Suastus* in both Vietnam (Dunn 2003) and Singapore (Khew 2003). This report for *Taractrocera* is the first record among Australian Hesperine. Although records remain few, pre-oviposition backward-walking does not appear to have taxonomic correlation, and indeed, may not be remarkable behaviour among ovipositing skippers in the Asia-Pacific region or perhaps elsewhere. In terms of its potential origin, Dunn (2003: 76) has opined that, "Co-occurrence in subfamilies that evolved and dispersed separately on the Australian (Trapezitinae) and Asian plates (Hesperinae) infers the behavior is ancient, probably stemming from the origin of the Hesperidae. This pre-oviposition behavior may prove widespread, although probably sporadic, among many other Asian skipper genera."

Based on a search of available literature, the six skipper species for which this supposed unusual behaviour has been reported comprise *Procidosa polysema* (Atkins 1973), *Trapezites lutea* (Fisher 1978), *Hesperilla malindava* (Dunn & Manskie 1988), *Neohesperilla senta* (Braby 1993), *Suastus grenius* (Dunn 2003, Khew 2003) and *Taractrocera papyria* (this paper). Collectively, these reports demonstrate that the behaviour is geographically widespread, at least in the Asia-Pacific region. In terms of behavioral commonality, all six species each of different genera, deposited their eggs on the anticipated or known larval host, rather than on adjacent substrates such as seed-heads of other neighbouring grasses, leaf litter and forest debris or artificial substrates, as has been reported for some eastern Australian skippers (Atkins 1988, 1999; Braby 1993, 2000; Dunn 1993a,b,c, 2000). Time delayed reddish-pattern development in the egg of *T. papyria* is already known (Fisher 1995; Braby 2000), and is a variable feature of eggs of at least four genera of Hesperinae in Australia (Fisher 1995; Lyonns 1999) and exists also in the Trapezitinae (Atkins 1999, Dunn 2000).

On this occasion, the observed female oviposited during mid afternoon when day temperatures are often warmest during the southern Australian summer. Bascombe *et al.* (1999: 113) reported the female of *Taractrocera ceramas* in Hong Kong (China) similarly lays her eggs singly on grass blades, and observed anecdotally that this occurs "often in hottest part of day."

In terms of species' field identification rigour, the white postmedian band on the hindwing underside immediately distinguishes *T. papyria* (see Braby 2000) from two other similar, sympatric darters resident in this National Park (*Ocybadistes walkeri* and *Suniana lascivia*). The author identified the oviposition substrate, *Microlaena stipoides*, and other grasses mentioned using keys and illustrations in Burbidge and Gray (1976).

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Editor's Report: The December issue will include a double-sided colour sheet and several diverse articles. A few articles are in reserve for February but more are needed. The editor and councillors will gladly assist any authors who wish to submit an article but are worried about format or style.

General Business:

- No Le Souëf Award nominations were received this year
- The Speaker program for 2005 was planned. Two members' nights were proposed.
- Insurance. Narnbool required \$10 million public liability and a suitable insurance policy would cost the Society \$671 per annum. Ian tabled a draft safety manual to be published at a later date and also advised that the Society cannot run excursions in its own name without addressing the issue of public liability. Ian will prepare an article on this subject in a future issue of *Vic. Ent.*
- Activity Questionnaire. A further 8 forms have been returned. Some offered to help refereeing, layout, submitting articles. A summary will appear in *Vic. Ent.*
- Gifts for speakers: Council is to investigate a suitable gift to be presented to speakers at General Meetings.
- Sun moths at Craigieburn: Ian Endersby attended a meeting of the Advisory Committee on the Society's behalf. Population counts will be held in December
- It was noted that the opening of the Sun Moth Reserve at Nhill was on 18 November. Peter Marriott forwarded an apology as President of the Society.
- A DPI Chief Scientists forum on Reference Collections was attended by Ian Endersby on behalf of the society. Ian will prepare a report to be published in a future issue of *Vic. Ent.*
- The entry time for the December meeting at Museum Victoria is 9:30AM not 9:00AM as printed in the minutes of the Oct issue of *Vic. Ent.*

Meeting closed at 9.59 pm.

.....

Survey List of the Butterflies of the Hunter Region of New South Wales - Errata

Andrew Atkins
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In a list of butterflies published in the previous issue (Atkins, A. A Survey List of The Butterflies of the Hunter Region of New South Wales. *Victorian Entomologist* 34(5): 53-57) I omitted the entry (under Lycaunidae p. 56) '*Paralucia aurifer* CA, CR, NW, w, ws', thus the number of species listed (on p. 53) is raised to 141.

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Discussion

In their summary, Gullan & Brookes (1998) note:

- most records of newly emerged adults seem to be in autumn (and mating has been observed in April in New South Wales)
- almost all collections seem to have been made in heathland, mallee or dry sclerophyll woodland in areas with well-drained, often sandy soil
- specimens have been collected especially from localities near the coast
- in Victoria, females were found on *Acacia* and *Leptospermum* but these are not necessarily the host plants of the nymphs which feed underground
- mature females have been collected under bark or on the trunk of various *Eucalyptus* species (WA and NSW)
- *Banksia* may be an important host genus for some *Callipappus* species
- for taxonomic purposes it is important to collect young adult females as the cuticle of older females becomes very leathery

My photographs demonstrate a salutary lesson in that time, date, locality and substrate should be recorded for all but the most common insect observations. Most of my comments are consistent with some of the recorded biology of this unusual insect but they lack the detail that could have added to our knowledge. With the publication of these photographs it is hoped that members will recognise and record further observations for this genus.

Acknowledgments

Thanks to Dr Murray Fletcher who identified the photograph of the uninvaginated female and to Artur Neboiss who identified a female and showed me specimens of the male so long ago that the Melbourne Museum entomological collection was still in the catacombs of the Russell Street building.

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Gullan, P.J. & H.M. Brookes. (1998). Giant females and bird-of-paradise flies: Notes on the biology of *Callipappus* Guérin-Méneville (Hemiptera: Margarodidae). *Australian Journal of Entomology* 37: 2-7.

Cont. from page 68

A couple of larger wasps, boldly spotted with white on black were also exploring the fissures. These proved easier to photograph than the first group.

Naturally human curiosity and superior muscle joined the hunt.

Beneath the first piece of bark lifted was a brightly patterned caterpillar, partly hidden in an incomplete cocoon. Under another piece of bark were several cocoons, one with a caterpillar and the others with pupae (fig. 3). The caterpillars were busily incorporating the debris behind the outer layer of bark into their cocoons.

Seven pupae were collected in a short time and, judging by the interest of the wasps there were many still hidden.

Next day moths of the Noctuid subfamily Agaristinae were perched on the bark, ignoring and ignored by the still busy wasps. These were the quite common day-flying moth *Phalaenoides glyciniae*. Others were observed feeding at Blackberry flowers and a couple came to the MV light at night.

By mid January the pupae yielded an adult moth and a female of the brightly coloured wasp. On January 28 another wasp emerged. This was a male of similar shape and size to the female but lacking the blue-green abdomen.

All wasps appear to be of the family Ichneumonidae but a search of the museum drawers did not yield a perfect match for any of those observed.

Golden Sun Moth Activities at Craigieburn Grassland Reserve

The Golden Sun Moth is critically endangered Australia-wide. Unlike most moths it is active during the day. Two populations at Craigieburn and Somerton were rediscovered in 2–4. Only a small number of other populations are known in Victoria.

Friends of Merri Creek and Merri Creek Management Committee invite you to join in the following activities:

- Golden Sun Moth Survey 1: Sunday, December 12th 2004. 10:30AM to 12.30PM
- Golden Sun Moth Survey 2: Sunday, December 19th 2004. 10:30AM to 12.30PM

Registration is essential for each of these activities (directions will be provided).

Please call by the previous Thursday; Barb or Brian at MCMC on 9380 8199

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DIARY OF COMING EVENTS

Saturday 11 December Excursion and General Meeting
at 9:30am SHARP, Museum Victoria, Carlton Gardens, Main Entrance

Scientific names contained in this document are *not* intended for permanent scientific record, and are not published for the purposes of nomenclature within the meaning of the *International Code of Zoological Nomenclature*, Article 8(b). Contributions may be refereed, and authors alone are responsible for the views expressed.